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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,113

01/17/2006

Kiyohisa Takahashi

2003JP306

6143

26289

7590

01/31/2007

AZ ELECTRONIC MATERIALS USA CORP.
ATTENTION: INDUSTRIAL PROPERTY DEPT.
70 MEISTER AVENUE
SOMERVILLE, NJ 08876

EXAMINER

ASHTON, ROSEMARY E

ART UNIT

PAPER NUMBER

1752

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/31/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/565,113

Applicant(s)

TAKAHASHI ET AL.

Examiner

Rosemary E. Ashton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-11 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date 5/11/06.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1,2,4-8,11 rejected under 35 U.S.C. 102(e) as being anticipated by Sugeta et al., US 2006/0258809 A1.

The patent teaches a composition for fine patterning comprising **PVA** as a water soluble resin. A **melamine derivative** such as a methoxyethylated melamine as a water soluble crosslinker (applicant's new claim 7) and a **mixed solvent** of water and alcohol as in new claim 8. It also contains a **surfactant** such as a quaternary ammonium salts dodecylmethylammonium cationic salt that is the same as laurylmethylammonium the cationic salt in claims 4 and 5. The pH is 7.5 to 13, which exceeds 7.0 as in claim 1 [section 36].

The method of using the coating meets the limitation is claims 6 and 11. The coating is applied to a photoresist pattern after is has been irradiated and

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developed. It is heated for 90 s at 115⁰C and developed with water. This is the same method used on page 21 of the specification.

The photoresist in the patent is a chemically amplified positive resist (TDUR-P036PM) as is the one on page 21.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugeta et al cited above in view of Isozaki et al. US2002/0037946 A1.

Sugeta is applied for the same reasons as above. It fails to teach the composition has a plasticizer

Isozaki et al. teaches a water soluble resin composition with PVA, as taught in Sugeta, with a plasticizer. The patent teaches the plasticizer is used for the purpose of improving the solubility of the composition comprising PVA in water (section 25).

It would have been obvious of one of ordinary skill in the art at the time the invention was made to add a plasticizer to the composition of Sugeta with a reasonable expectation of obtaining the resist overcoat have improved solubility

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in water because Isozaki teaches this is the purpose of a plasticizer in a water soluble resin composition.

5. Claims 1,2,4,7,8, are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2004-77951 in view of Thackeray et al. US 5,968,712.

JP 2004-77951 teaches a pattern forming material comprising a water soluble resin such as **PVA, polyacrylic acid or polyvinylpyrrolidone** (claim 2), **a melamine derivative or a urea derivative** as a water soluble crosslinker (new claim 7) and **an amine compound** such as 4-nitroaniline (JP 2004-77951, section 16, line 12). The composition also comprises a **surfactant** and a **mixed solvent** such as water and an alcohol (JP 2004-77951, example 1).

JP 2004-77951 does not teach the amine compound is one of the ones claimed by applicant.

Thackeray et al. US 5,968,712 teaches a radiation sensitive composition comprising amine compounds and equates an amine compound in JP 2004-77951 (4-nitroaniline) with an amine compound in the instant application (amino acid). Thus, JP 2004-77951 teaches the amine compound 4-nitroaniline may be used in the invention and Thackeray et al teaches 4-nitroaniline and amino acids such as glycine, tryptophan, serine and threonine (col. 2, lines 38-64).

It would have been obvious of one of ordinary skill in the art at the time the invention was made to use an amino acid as the amine compound in JP 2004-77951 instead of 4-nitroaniline to obtain a pattern forming material because Thackeray teaches they are equivalent in the art.

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6. Claims 1,2,4,6-8,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP-1223470 or JP 10-73927 in view of JP 2004-77951 cited above and Thackeray cited above.

EP-1223470 and JP 10-73927 each teach the method claimed by applicant in claim 6, however, the composition used in the method a water soluble resin such as **PVA, a surfactant and a melamine derivative** as a water soluble crosslinker but no amine compound (page 4, sections 19-20).

JP 2004-77951 teaches a pattern forming material comprising a water soluble resin such as **PVA, polyacrylic acid or polyvinylpyrrolidone** (claim 2), **a melamine derivative or a urea derivative** as a water soluble crosslinker (new claim 7) and **an amine compound** such as 4-nitroaniline (JP 2004-77951, section 16, line 12). The composition also comprises a **surfactant** and a **mixed solvent** such as water and an alcohol (JP 2004-77951, example 1).

JP 2004-77951 does not teach the amine compound is one of the ones claimed by applicant.

Thackeray et al. US 5,968,712 teaches a radiation sensitive composition comprising amine compounds and equates an amine compound in JP 2004-77951 (4-nitroaniline) with an amine compound in the instant application (amino acid). Thus, JP 2004-77951 teaches the amine compound 4-nitroaniline may be used in the invention and Thackeray et al teaches 4-nitroaniline and amino acids such as glycine, tryptophan, serine and threonine (col. 2, lines 38-64).

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It would have been obvious of one of ordinary skill in the art at the time the invention was made to use an amino acid as the amine compound in JP 2004-77951 instead of 4-nitroaniline to obtain a pattern forming material because Thackeray teaches they are equivalent in the art.

It would have been obvious of one of ordinary skill in the art at the time the invention was made to use the composition of JP 2004-77951 combined with Thackeray in the method of EP-1223470 or JP 10-73927 with a reasonable expectation of obtaining a finer space portions in a pattern because each patent uses a water soluble coating to affect the size of the resist pattern.

Allowable Subject Matter

7. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: No prior art was found having a partially protected polyallylamine in a water soluble resin composition as in claim 3.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosemary E. Ashton whose telephone number is 571-272-1326. The examiner can normally be reached on Mon-Fri, 11:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Rosemary E. Ashton
Primary Examiner
Art Unit 1752

1/27/07

ROSEMARY ASHTON
PRIMARY EXAMINER